

AMENDMENTS TO THE CLAIMS

The following claim listing replaces all prior listings and versions thereof.

1. (Original) A lens barrel comprising:

a housing having a ring portion surrounding an optical axis;

a first optical element and a second optical element which are positioned radially inside said ring portion and which are movable along said optical axis relative to said housing;

a support frame which supports said second optical element, and has at least one radial arm portion which projects radially outwards to such an extent that an outer end of said radial arm portion is positioned radially outside said ring portion of said housing; and

at least one guide shaft positioned radially outside said ring portion, and configured to guide said radial arm portion in said optical axis direction.

2. (Original) The lens barrel according to claim 1, wherein the lens barrel is a retractable lens barrel,

wherein said support frame comprises a ring-shaped portion which holds said second optical element, said radial arm portion projecting radially outwards from a rear end of said ring-shaped portion, and

wherein said first optical element is positioned radially outside said ring-shaped portion of said support frame, and between said ring-shaped portion of said support frame and said ring portion of said housing when said lens barrel is in a retracted state.

3. (Original) The lens barrel according to claim 1, wherein said radial arm portion comprises a pair of radial arm portions which project radially outwards to be positioned on substantially

opposite sides of an optical axis of said second optical element.

4. (Original) The lens barrel according to claim 1, further comprising:

at least one third optical element positioned behind said second optical element; and

a rear-end cover fixed to a rear end of said ring portion of said housing and substantially covering said rear end of said ring portion, and further supporting said third optical element on a front side of said rear-end cover;

wherein said housing includes at least one radial projection which projects radially outwards from said ring portion of said housing, and

wherein said radial projection and said rear-end cover have front and rear shaft-supporting holes which oppose each other in said optical axis direction to support opposite ends of said at least one guide shaft, respectively.

5. (Original) The lens barrel according to claim 4, wherein said third optical element comprises an image pick-up device.

6. (Original) The lens barrel according to claim 1, wherein said first optical element and said second optical element comprise a front lens group and a rear lens group, respectively.

7. (Original) The lens barrel according to claim 6, further comprising a lens group positioned in front of said front lens group,

wherein said lens group and said front lens group are configured to be moved along said optical axis while changing a distance therebetween to vary a focal length in an operating state of said lens barrel.

8. (Original) The lens barrel according to claim 7, wherein the lens barrel is a retractable

lens barrel, and

wherein said lens group, which is positioned in front of said front lens group, is positioned closer to said rear lens group in a retracted state of said lens barrel than said operating state of said lens barrel.

9. (Original) The lens barrel according to claim 6, wherein said rear lens group is movable along said optical axis via said support frame and said guide shaft to perform a focusing operation.

10. (Original) The lens barrel according to claim 1, wherein the lens barrel is fixed to a camera body,

wherein said camera body comprises an LCD panel positioned behind said support frame in said optical axis direction, and

wherein said guide shaft extends in said optical axis direction such that at least a portion of said guide shaft overlaps said LCD panel in a radial direction of said optical axis.

11. (Original) The lens barrel according to claim 10, wherein a rear end of said guide shaft is extended rearward to a position radially outside said LCD panel.

12. (Original) The lens barrel according to claim 1, wherein said housing is a stationary barrel fixed to a camera body.

13. (Original) The lens barrel according to claim 1, further comprising at least four optical elements including said first optical element and said second optical element,

wherein said four optical elements include a third optical element and a fourth optical element which are positioned behind said second optical element and in front of said first optical element, respectively.

14. (Original) The lens barrel according to claim 2, wherein said ring-shaped portion is a substantially rectangular ring shape.

15. (Original) A lens barrel comprising:

a photographing optical system including a first optical element and a second optical element;
a stationary barrel including a ring positioned around an optical axis of said photographing optical system, said first optical element and said second optical element positioned radially inside said ring and configured to be guided along said optical axis relative to said ring;

a linearly movable frame positioned behind said ring, said linearly movable frame including a lens holder which holds said second optical element, and a pair of radial arm portions which project radially outwards from said lens holder in substantially opposite directions away from each other to such an extent that respective outer ends of said pair of radial arm portions are positioned radially outside said ring; and

a pair of guide shafts positioned radially outside said ring and configured to guide said pair of radial arm portions in said optical axis direction, respectively.

16. (New) A digital camera comprising:

a body;
an image pick-up device disposed within the body;
a housing disposed within said body and having a ring portion surrounding an optical axis;
a first optical element and a second optical element which are positioned radially inside said ring portion and which are movable along said optical axis relative to said housing;
a support frame which supports said second optical element, and has at least one radial arm

portion which projects radially outwards to such an extent that an outer end of said radial arm portion is positioned radially outside said ring portion of said housing; and

at least one guide shaft positioned radially outside said ring portion, and configured to guide said radial arm portion in said optical axis direction.

17. (New) The camera according to claim 16, further comprising a retractable lens barrel, wherein said support frame comprises a ring-shaped portion which holds said second optical element, said radial arm portion projecting radially outwards from a rear end of said ring-shaped portion, and

wherein said first optical element is positioned radially outside said ring-shaped portion of said support frame, and between said ring-shaped portion of said support frame and said ring portion of said housing when said retractable lens barrel is in a retracted state.

18. (New) The camera according to claim 16, wherein said radial arm portion comprises a pair of radial arm portions which project radially outwards to be positioned on substantially opposite sides of an optical axis of said second optical element.

19. (New) The camera according to claim 16, wherein said image pick-up device is positioned behind said second optical element, the camera further comprising a rear-end cover fixed to a rear end of said ring portion of said housing and substantially covering said rear end of said ring portion, and further supporting said image pick-up device on a front side of said rear-end cover;

wherein said housing includes at least one radial projection which projects radially outwards from said ring portion of said housing, and

wherein said radial projection and said rear-end cover have front and rear shaft-supporting

holes which oppose each other in said optical axis direction to support opposite ends of said at least one guide shaft, respectively.

20. (New) The camera according to claim 16, wherein said first optical element and said second optical element comprise a front lens group and a rear lens group, respectively.

21. (New) The camera according to claim 20, further comprising a lens group positioned in front of said front lens group,

wherein said lens group and said front lens group are configured to be moved along said optical axis while changing a distance therebetween to vary a focal length in an operating state of the camera.

22. (New) The camera according to claim 21, further comprising a retractable lens barrel, and

wherein said lens group, which is positioned in front of said front lens group, is positioned closer to said rear lens group in a retracted state of said retractable lens barrel than said operating state of said retractable lens barrel.

23. (New) The camera according to claim 16, further comprising a lens barrel attached to said body;

wherein said camera body comprises an LCD panel positioned behind said support frame in said optical axis direction, and

wherein said guide shaft extends in said optical axis direction such that at least a portion of said guide shaft overlaps said LCD panel in a radial direction of said optical axis.

24. (New) The camera according to claim 16, wherein said housing is a stationary barrel

fixed to said camera body.

25. (New) The camera according to claim 16, further comprising at least four optical elements including said first optical element and said second optical element, wherein said four optical elements include a third optical element and a fourth optical element which are positioned behind said second optical element and in front of said first optical element, respectively.